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CMS conservation management systems
CONSULTANTS IN SOIL CONSERVATION AND WATER MANAGEMENT

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PROGRAM CONSULTANT CONFIGURATIONS AND COSTS

Southwestern Ontario Soil and Water

Enhancement Program

Submitted to:

Regional Development Branch

Agriculture Canada

Submitted by:

Conservation Management Systems

Waterloo, Ontario

April 26, 1985

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April 26, 1985 19-105-01

Dr. John Meek
Regional Development Branch (Ontario)
Agriculture Canada
102 Bloor Street West
Suite 402
TORONTO, Ontario
M5S 1M8

Dear Dr. Meek:

Please find enclosed ten (10) copies of our report "Program Consultant Configurations and Costs - Southwestern Ontario Soil and Water Enhancement Program".

We have identified several options for consultant configurations for both the technology evaluation and the pilot demonstration watershed programs. A recommended option is identified in each case and the cost thereof is estimated.

Thank you for the opportunity to conduct this analysis on your behalf.

Yours very truly,

CONSERVATION MANAGEMENT SYSTEMS

DR Cressman

D.R. Cressman, P.Ag., C.P.E.S.C.
General Manager

DRC/vw

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1.0 INTRODUCTION

Agriculture Canada, in cooperation with Environment Canada and several provincial ministries of the Ontario government is developing plans for a potential program to address problems of soil degradation and pollution of Lake Erie waters from agricultural land runoff. The program would be known as the Southwestern Ontario Soil and Water Enhancement Program.

Funding for the various sub-programs of this overall program would come from several agencies. Agriculture Canada would fund a technology evaluation and demonstration sub-program and a pilot demonstration watershed sub-program. It is anticipated that a significant portion of these two programs would be carried by contractors acting on behalf of Agriculture Canada.

Conservation Management Systems (CMS) was retained to assist in defining the role of contractors and in estimating program costs. As input to the cost estimates for farm cooperators, we were asked to develop and describe a model of a typical soil and water conservation demonstration site and a small pilot watershed site. The cost to Agriculture Canada of contracting with farmers for the implementation of such programs was to be estimated.

This draft report presents our findings on alternate structures and costs.

2.0 PURPOSE

The specific purposes of this report are threefold:

1. to identify and evaluate alternate consultant configurations for each of the Pilot Demonstration Watershed Sub-Program and the Technology Evaluation and Demonstration Sub-Program;

2. to present cost estimates for each of the six years of the program;

3. to provide a basis for preparing RFP's for the consulting tasks.

3.0 ALTERNATE CONSULTANT CONFIGURATIONS

3.1 Pilot Demonstration Watershed Sub-Program

In this sub-program there would be a principal contractor who is responsible for all of the work within the sub-basins except for the soil survey work. In the latter case he would receive input from the soil survey sub-contractor (shown as ----->).

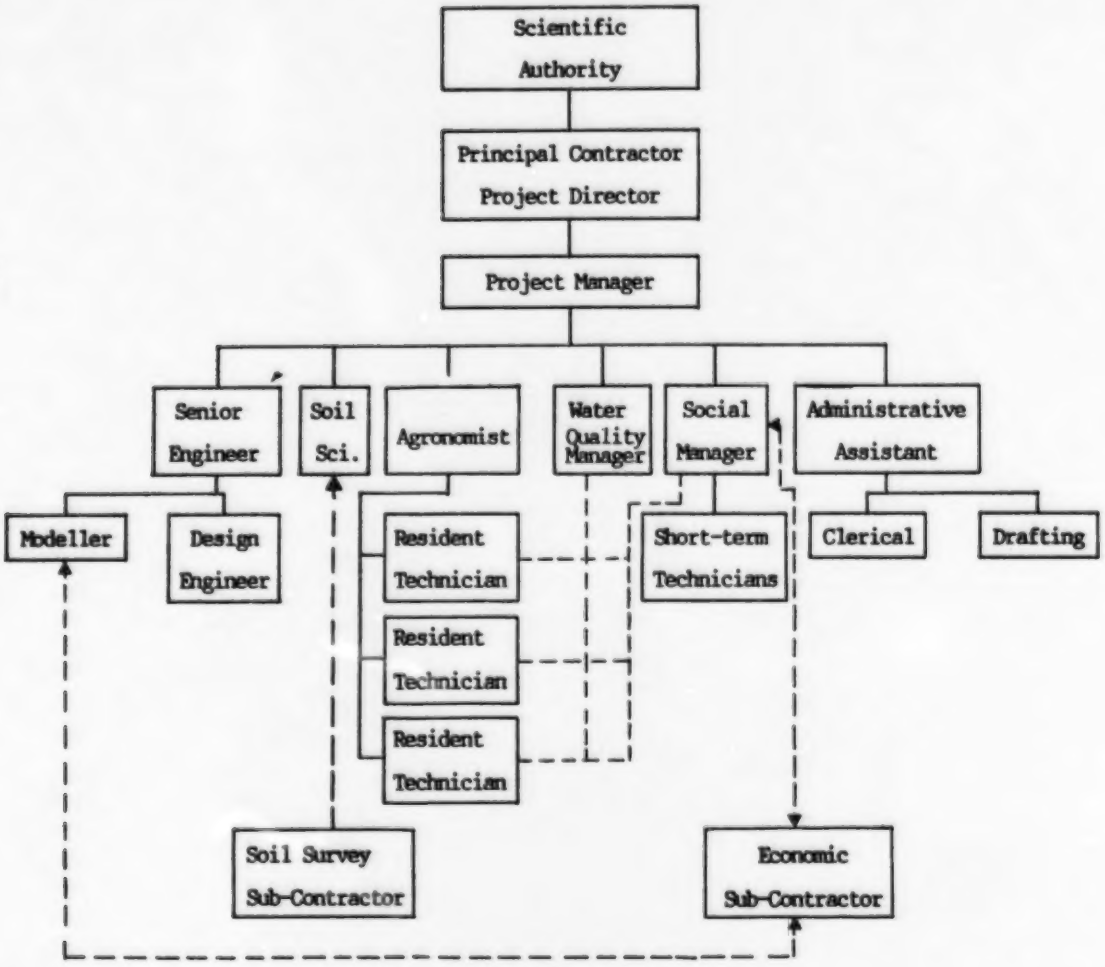
The options diagramed below vary in the degree to which the principal contractor relies on his own staff as opposed to sub-contractors for support services in the key disciplines. In all cases it is assumed that he provides at least project management and the three resident technicians from his own staff.

3.1.1 Option A

In this option the day-to-day management responsibilities fall to the Project Manager. The tasks for which he is responsible and in which he participates are shown in Appendix Table A-1. His time commitment per annum is shown in Table 1.

The Project Manager would have at most, six persons reporting to him, two (Agronomist and Administrative Assistant) on a fairly regular basis. Day-to-day supervision of the resident technicians would be the responsibility of the Agronomist while supervision of office support

OPTION A


Scientific Authority
Principal Contractor Project Director
Project Manager
Senior Engineer
Soil Sci.
Agronomist
Water Quality Manager
Social Manager
Administrative Assistant
Modeller
Design Engineer
Resident Technician
Resident Technician
Resident Technician
Short-term Technicians
Clerical
Drafting
Soil Survey Sub-Contractor
Economic Sub-Contractor

staff would be the responsibility of the Administrative Assistant. The Senior Engineer would supervise the Design Engineer and Modeller.

An indication of the required experience level of the P.C.'s project staff and a synopsis of roles is outlined below:

PERSONNEL	APPROX. ANNUAL SALARY ($K)	EXPERIENCE	ROLE
1. Project Director	50-55	A principal of the P.C. firm with experiencing in directing similar projects	Ensures that project meets objectives, stays within budget; liaison with S.A. & oversight of all sub-contracts.
2. Project Manager	40-45	A senior in the firm with directly relevant disciplinary background & extensive experience in managing projects re erosion & water quality; ability to work well with the rural community	Responsible for day-to day operations, co-ordinations among project staff; sub-contractors & farmers; quality, schedule & budget control
3. Senior Engineer	45-50	A senior in the firm with experience in planning & design of erosion control structures & systems in modelling erosion & sediment transport processes.	Supervise the design of structures and modelling for problem definition and evaluation of remedial measures.

PERSONNEL	APPROX. ANNUAL SALARY ($K)	EXPERIENCE	ROLE
4. Agronomist	35-40	A senior in the firm with extensive field experience with farmers in soil & crop management & in soil conservation practices.	Design the data collection system with cooperators, coordinate develop. farm plans, negotiate contracts, supervise resident technicians.
5. Soil Scientist	35-40	A senior in the firm with experience in USLE modelling & designing erosion control practices.	Interact with the soil survey sub-consultant and assist in development of basin & farm plans.
6. Social Manager	30-35	A senior or intermediate staff person with experience in social surveys & analysis in rural settings & experience in meetings with farmers.	Supervise technicians in collecting and analyzing socio-economic data; organize meetings with "cooperators"; handle publicity matters.
7. Water Quality Manager	30-35	A senior or intermediate staff person with experience in water quality sampling & data analysis.	Supervise field technicians in collecting water samples; analyze lab results.
8. Design Engineer	30-35	An intermediate staff engineer wtih field experience in the design of erosion control structures & hydrologic modelling.	Design structures, supervise construction; monitor effectiveness; trouble-shooting re water quantity sampling.
9. Modeller	40-45	An intermediate staff person with experience in developing & using models in nonpoint source control programs.	Develop & test models for evaluating remedial measures; interact with economic sub-contractor & technology sub-program.

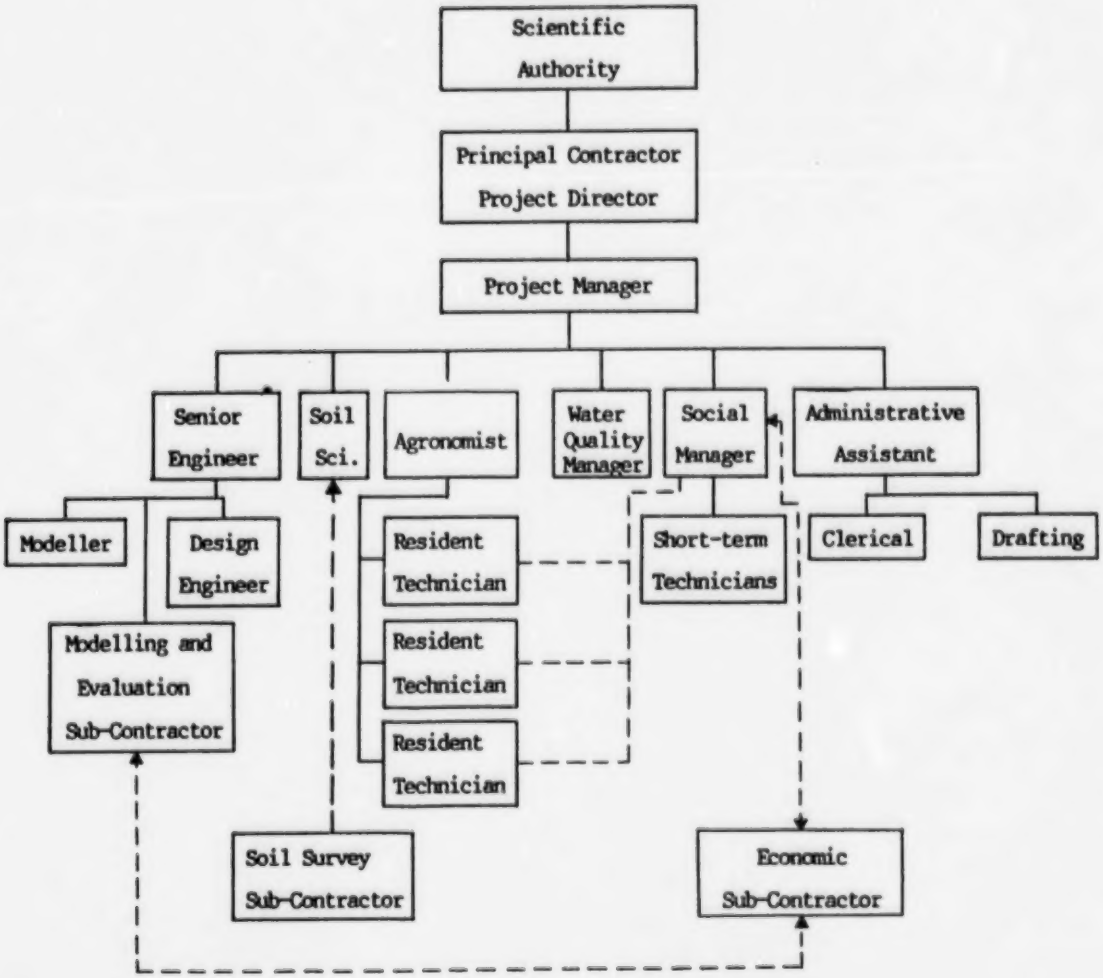
PERSONNEL	APPROX. ANNUAL SALARY ($K)	EXPERIENCE	ROLE
10. Administrative Assistant	25-30	An intermediate staff person with technical expertise in a related field.	Assist the P.M. in project management & control; progress reporting; developing contracts; monitoring co-ordination mechanisms; supervises clerical & drafting staff.
11. Resident Technicians	23-28	Technicians with field experience in rural erosion control programs.	Collect & analyze data; primary contact with cooperators and/or the local public.

In this option, the modelling and evaluation work would be undertaken directly by the P.C. rather than through a sub-contract. This would enable much better integration of the study design and data collection tasks with the requirements of the modelling work. In this case, primary responsibility for model development rests with the P.C., both for use by the economic sub-contractor and for use in the Technology Evaluation and Demonstration sub-program.

3.1.2 Option B

In this option, responsibility for modelling and evaluation rests with a sub-contractor. A mechanism would be needed to ensure compatibility between this sub-contractor, the P.C. and the economic sub-contractor. Staff capabilities are the same as for Option A.

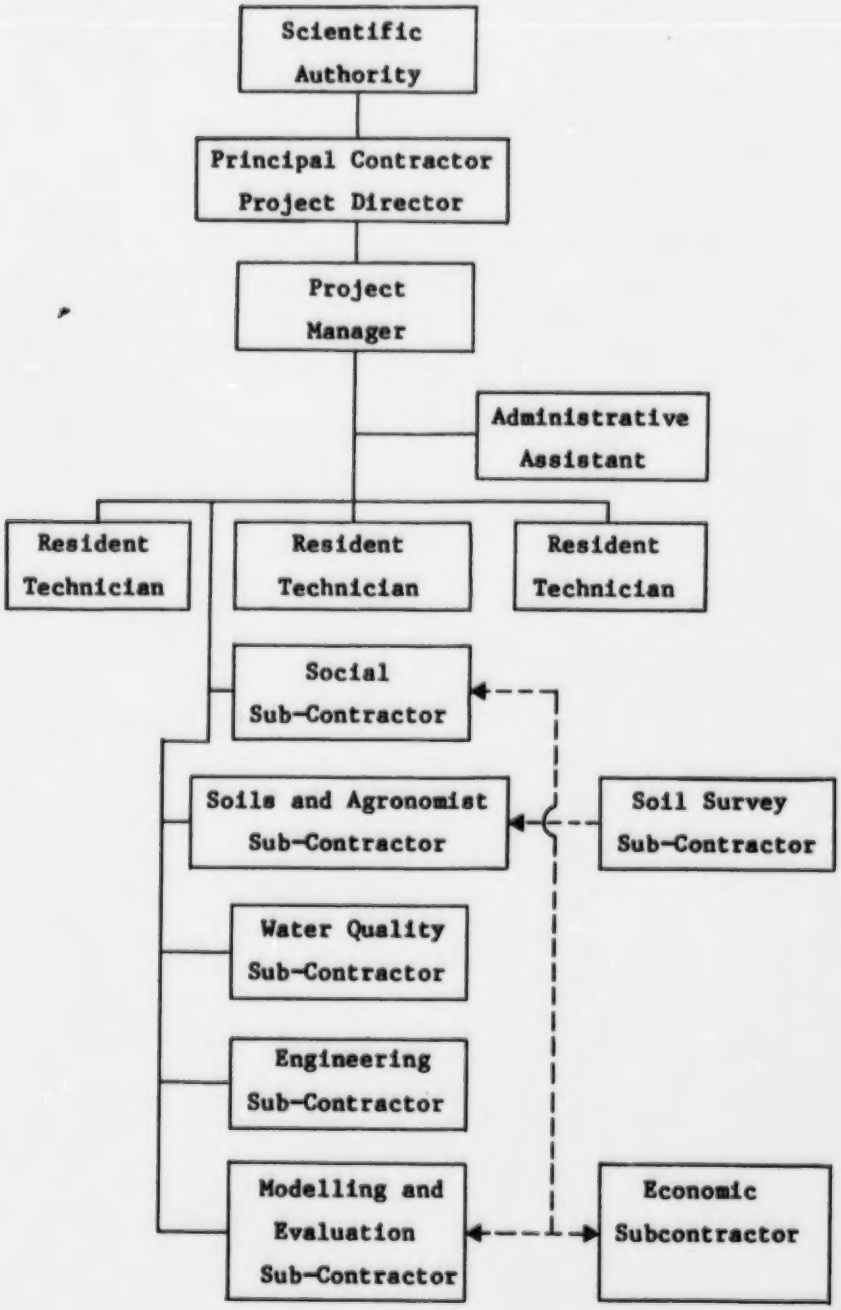
OPTION B


Scientific Authority
Principal Contractor Project Director
Project Manager
Senior Engineer
Soil Sci.
Agronomist
Water Quality Manager
Social Manager
Administrative Assistant
Modeller
Design Engineer
Modelling and Evaluation Sub-Contractor
Resident Technician
Resident Technician
Resident Technician
Short-term Technicians
Clerical
Drafting
Soil Survey Sub-Contractor
Economic Sub-Contractor

3.1.3 Option C

In this case, the P.C. relies upon sub-contractors for all or most of the support expertise. Types of expertise and level of experience are basically the same as in Option A.

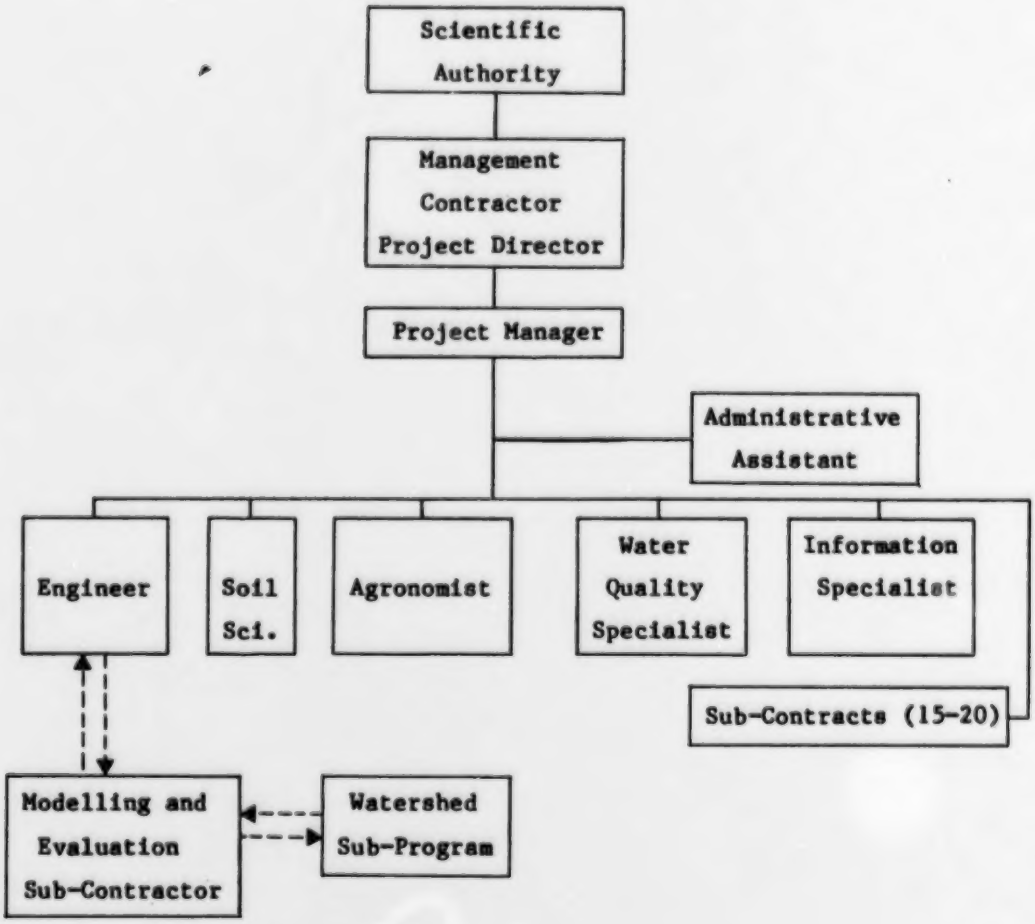
Option C


Scientific Authority
Principal Contractor Project Director
Project Manager
Administrative Assistant
Resident Technician
Resident Technician
Resident Technician
Social Sub-Contractor
Soils and Agronomist Sub-Contractor
Soil Survey Sub-Contractor
Water Quality Sub-Contractor
Engineering Sub-Contractor
Modelling and Evaluation Sub-Contractor
Economic Subcontractor

3.2 Technology Demonstration and Evaluation Sub-Program

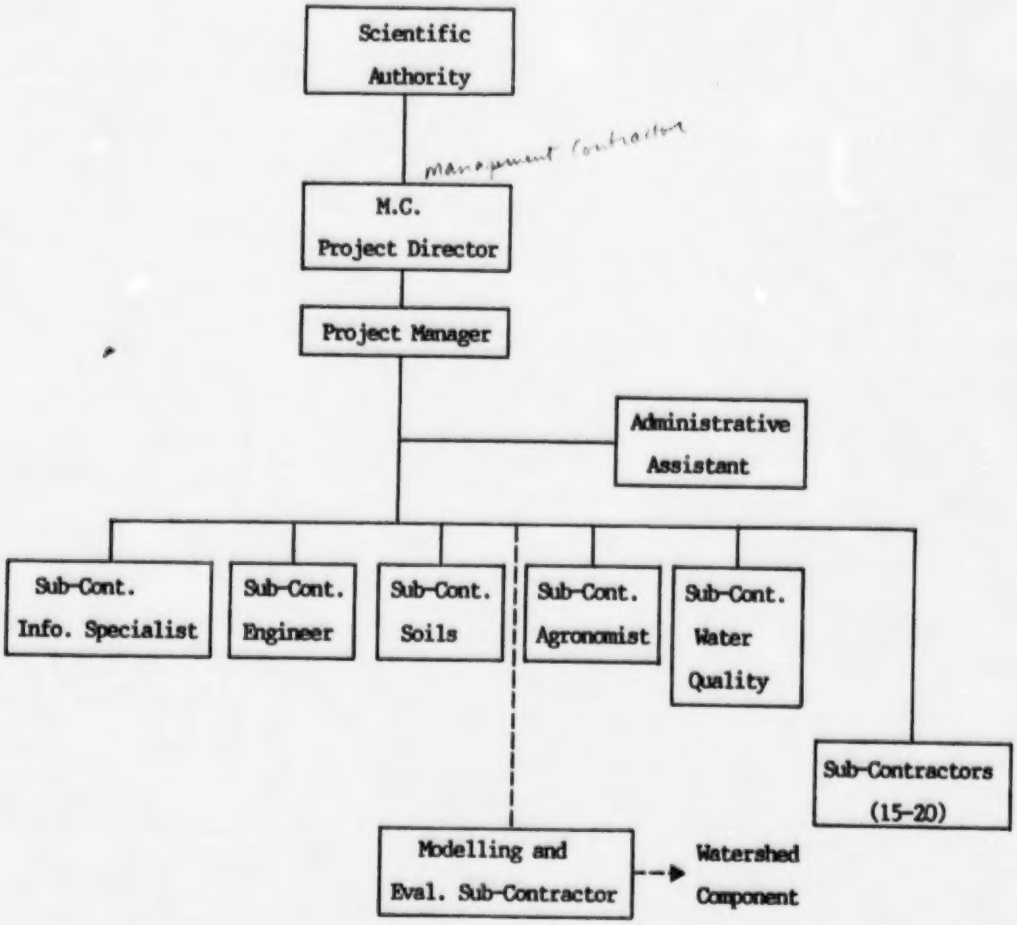
In this sub-program, two options are presented with, again, the basic difference being in the extent to which the Management Contractor provides the support expertise from his own staff.

Option A



The estimate of man-days/annum/staff person appears in Table 2 and the estimates per task are in Appendix Table A2.

OPTION B


Scientific Authority
Management Contractor
M.C. Project Director
Project Manager
Administrative Assistant
Sub-Cont. Info. Specialist
Sub-Cont. Engineer
Sub-Cont. Soils
Sub-Cont. Agronomist
Sub-Cont. Water Quality
Sub-Contractors (15-20)
Modelling and Eval. Sub-Contractor
Watershed Component

4.0 RECOMMENDED CONSULTANT CONFIGURATIONS

In the case of both sub-programs we recommend Option A as the preferred option. The reasons for preferring in-house study teams are as follows:

a) better communications among team members and more direct accountability to the Project Director, thus, better quality and budget control;

b) less costly since extra administrative/co-ordination costs would be avoided;

c) in the technology evaluation and demonstration sub-program, the M.C. will have many sub-contracts to administer; additional sub-contracts for professional-technical support services will be burdensome and difficult to manage, especially since they would not be "finite product" contracts;

d) to enhance the prospect of obtaining "best possible service" from professional-technical support personnel, these persons should have a direct and primary commitment to the client; sub-contractors rarely perform as effectively as prime-contractors.

5.0 PRELIMINARY COST ESTIMATES OF SUB-PROGRAMS

Initial cost estimates have been prepared for each sub-program. Emphasis was placed on the costs associated with the P.C. and M.C. components.

In order for realistic costs to be developed for the P.C. and M.C. components, it was necessary to enumerate the tasks that would likely be involved for each staff function. These task lists were developed from the background material provided by the Committee.

For costing purposes, we used Option B in the Pilot Watershed Sub-program and Option A in the Technology Evaluation and Demonstration Sub-program. Option B was used so that we could show a separate estimate for the "modelling and evaluation" component.

The costs per task are shown in Appendix Tables A1 and A2. Tables 1 and 2 show the estimated man-days per staff role per annum and the total professional staff costs per annum. Clerical and drafting support costs are shown separately on Tables 3 and 4.

Assumptions employed in developing the preliminary program cost estimates follow Tables 3 and 4.

TABLE 1

REQUIREMENTS FOR PILOT DEMONSTRATION WATERSHED SUB-PROGRAM

PERSONNEL	YEAR 1	2	3	4	5	6	TOTAL
			(days)				
Project Director	47	39	42	42	42	62	
Project Manager	103	134	109	104	105	156	
Soc. Mgn.	114	25	0	0	0	0	
Soil Sci.	27	34	16	231	21	42	
Agronomist	26	58	88	72	67	121	
Sr. Engin.	7	13	4	3	3	9	
Engineer	25	93	33	15	15	37	
Biologist	21	12	25	20	16	31	
Resid. Technician	255	725	725	725	725	725	
Other Technicians	35	0	0	0	- -	- -	
Modeller	5	3	0	0	- -	- -	
Information Specialist	10	43	43	43	43	43	
Admin. Assis.	50	100	100	100	100	100	
Fee Cost ($K)	237	398	367	364	370	500	2,236

TABLE 2

REQUIREMENTS FOR TECHNOLOGY EVALUATION AND DEMONSTRATION SUB-PROGRAM

PERSONNEL	YEAR 1	2	3	4	5	6	TOTAL
			(days)				
Project Director	64	85	75	76	71	89	
Project Manager	150	173	130	127	131	174	
Soil Sci.	91	81	59	59	59	86	
Agronomist	136	178	140	138	144	196	
Engineer	74	99	59	54	57	69	
Biologist	52	49	43	42	40	53	
Admin. Assis.	150	125	125	125	125	100	
Info. Spec.	- -	65	65	65	65	110	
Fee Cost ($K)	288	364	282	317	336	449	2,036

TABLE 3

PRELIMINARY ESTIMATE OF PROGRAM COSTS
PILOT DEMONSTRATION WATERSHEDS SUB-PROGRAM

($K)

YEAR	P.C. PROFESSIONAL FEES	P.C. SUPPORT STAFF	P.C.[1*] EXPENSES	MODELLING AND[2] EVALUATION	SOIL[3] SURVEY	TILLAGE[4] EQUIPMENT	FARMER[5] CONTRACTS	CONSTRUCTION[6]	TOTALS
1	237	25	60	60	40	250	92	75	839
2	398	25	63	63	60	--	97	75	781
3	367	21	66	66	63	--	101	--	684
4	364	22	69	69	66	--	107	--	697
5	370	23	73	73	69	--	112	--	720
6	500	30	77	85	73	--	117	--	882
TOTALS	2,236	146	408	416	371	250	626	150	4,603

* See notes on next page.

TABLE 4

PRELIMINARY ESTIMATE OF PROGRAM COSTS

TECHNOLOGY EVALUATION AND DEMONSTRATION SUB-PROGRAM

($K)

YEAR	M.C. PROFESSIONAL FEES	M.C. SUPPORT STAFF	M.C. EXPENSES	MODELLING AND EVALUATION	SUB-CONTRACTORS	FARM CONTRACTS	TILLAGE EQUIPMENT	DESIGN AND CONSTRUCTION	TOTALS
1	288	19	20	33	315	135	225	30	1,065
2	364	20	21	35	331	142	--	180	1,093
3	282	21	22	36	347	149	--	--	857
4	317	22	23	38	365	156	--	--	921
5	336	23	24	40	383	164	--	--	970
6	449	24	26	42	402	172	--	--	1,115
TOTALS	2,036	129	136	224	2,143	918	225	210	6,021

ASSUMPTIONS

PILOT DEMONSTRATION WATERSHED SUB-PROGRAM

1. Number of cooperators
   - in 3 test basins will likely achieve an average of 6 cooperators, a total of 18 cooperators; assume 24 operators in the 3 control basins.
   - of the 18, 12 will require some form of engineering solution in addition to agronomic forms of eroison and sediment control

2. Resident technicians
   - one technician per pair of basins will work full-time (260 days less vacation and statutory holidays) and be resident in or very close to the basins

3. Modelling

   a) Modeller (P.C. team) - in this cost estimate, the modeller on the P.C. team is serving as a link with a modelling and evaluation contractor to ensure taht the study design is consistent with the intended modelling approach.

   b) Modelling and Evaluation Sub-Contract -

1 Senior	10 days @ $450	=	$ 4,500
1 Intermediate	20 days @ $375	=	7,000
1 Junior (full time)	240 days @ $170	=	40,800
Expenses			7,700
TOTAL			$60,000

4. Soil Survey
   - mapping required in 12 basins for problem definition; very detailed mapping and sampling to follow in 6 basins for farm plan and monitoring purposes

   Mapping and reporting - $40,000 (one-time cost)
   Monitoring - 30 farms @ 5 days/year and $400/day = $60,000
   (this includes expenses)

5. Tillage equipment
   - preliminary ball-park @ $250,000

6. Farm contracts
   - 18 contracts @ $4,500 in test basins
   - 24 contracts @ $ 500 in control basins

7. Construction
   - 12 farms @ $12,500

8. An inflationary factor of 5% is allowed for in all costs from YEAR 1-6.

ASSUMPTIONS

TECHNOLOGY EVALUATION AND DEMONSTRATION SUB-PROGRAM

1. Number of sub-contracts - 15 with 3 farms per sub-contract
   - assume 45 farmer contracts

2. Cost/sub-contract - 1 technician for 5 months @ $120/day = $12,000
   - 1 Senior contractor 20 days @ $250 = 5,000
   - Expenses = 2,000
   $19,000
   - assume $20,000/sub-contractor

3. Cost of farmer contract - $3,300 (does not involve operator's entire farm)

4. Tillage equipment - $225,000

5. Design and construction - design for 16 farms @ $2,000
   - construction @ $12,500

6. Modelling and evaluation -

1 Senior	5 days @ $450	=	$ 2,250
1 Intermediate	15 days @ $170	=	5,625
1 Junior	120 days @ $170	=	20,400
Expenses		=	4,500
			$32,775

APPENDIX A

FORECAST OF COMPENSATION PAYMENT REQUIREMENTS FOR FARM COOPERATORS

INTRODUCTION

Compensation payments to farm cooperators must be considered an integral part of any long-term on-farm demonstration or research program to control non-point source pollution. Without adequate compensation, farm operators cannot be expected to participate for any length of time in programs that may result in a direct on-farm cost. This appendix provides an estimate of these on-farm costs for the proposed Lake Erie pilot watershed program of Agriculture Canada. Only one remedial measure, conservation tillage, is considered here.

After outlining general assumptions that set a framework, this appendix focusses on individual accounting items. These include costs (and savings) associated with new tillage operations, additional chemical costs and the revenue consequences of yield impacts. Next, these items are brought together to analyse per acre costs over the cropping cycle. Per acre costs are then extrapolated to hypothetical pilot watersheds. A final section compares results here to those found elsewhere and suggests realistic compensation payment requirements that can be assumed for budgeting purposes.

GENERAL ASSUMPTIONS

Conventional

Conservation tillage is assumed to entail fall plowing with a standard moldboard plow followed by spring cultivation. Conservation tillage assumes replacement of the moldboard plow with a chisel plow applied in

the fall. Spring cultivation remains unchanged. This is clearly a conservative assumption. Its implications are discussed in the final section.

Remaining assumptions are specific to sub-watersheds of the Lake Erie Basin. These are made to increase the accuracy and credibility of the analysis. Pilot watersheds in three regions are considered; two towards the southwest and one in the north central Basin. Continuous row crops are assumed in the southwest watersheds; in one case on silt-loam soils, and, in the other, on clay-loam soils. The northern watershed is assumed to have an equal mix of corn system and mixed system crop cycles on silt-loam soils.

The specific rotations assumed are as follows:

Continuous Row Crops -
Soy Beans / Soy Beans / Gr. Corn / Gr. Corn / Gr. Corn

Corn System -
Gr. Corn / Gr. Corn / Gr. Corn / Barley / W. Wheat

Mixed System -
Gr. Corn / Gr. Corn / Gr. Corn / Barley / Hay / Hay / Hay

Crop proportions in these systems are consistent with the crop system definitions applied for the Land-Use System Mapping of Agriculture Canada and the Ontario Ministry of Agriculture and Food.

Cost estimates are based on dollar values as of 1984 and early 1985.

TILLAGE COSTS

Fixed costs and repair and maintenance costs for tillage are estimated using a procedure by Buth (1984). The following data are used:

Table 1: Data and Sources

Item	Value	Source
Cost of Chisel Plow (15 foot John Deere)	$6,000	Elmira Farm Service
Cropland Area/farm	200 acres	assumed
Tillage Rate - Chisel	6.5 ac/hr	John Deere Ltd., 1980
- Moldboard	3.5 ac/hr	
Fuel Price	.36/litre	assumed
Fuel Use - Chisel	4.2 litres/ac	John Deere Ltd., 1980
- Moldboard	7.8 litre/ac	
Oil, Grease & Filter Costs	15% of fuel cost	Buth, 1984
Labour Costs	$6.50/hr	OMAF, 1984

Calculations for Chisel plow costs are as follows:

a) Hours of Implement Use
   - Cropland Area/tillage rate - 200 ac/6.5 hrs/ac
   - 31 hrs

b) Fixed, Repair & Maintenance Costs/hr (see Buth, 1984)
   - (50/(hrs. of use)) x $3.46 x (Price/1000) -
   (50/31) x (6000/1000) - $33.50/hr.

c) Fixed, Repair & Maintenance Costs/ac
   - (costs/hr)/(ac/hr) - $33.50/6.5
   - $5.15

d) Fuel, Oil, Grease & Filter Costs/ac (see Buth, 1984)
   - (fuel use/ac) x (fuel cost) x 1.15 - (4.2 1/ac) x ($.36) x 1.15
   - $1.74

e) Labour Costs/ac
   (hourly wage)/(ac/hr) - $6.50/6.5
   - $1.00/ac

f) Total Costs/ac
   - $5.15 + $1.74 + $1.00 - $7.89/ac

Operating costs for the moldboard plow are avoided and thus saved. These include fuel, oil, grease, filter and labour costs. Using the methodology outlined above they amount to $5.09/ac. Thus the net cost of primary tillage with the chisel plow is ($7.89 - $ 5.09) - $2.80/ac.

CHEMICAL COSTS

Ketcheson et al. (1983) discuss problems with pests and weeds that may arise when crop residues remain on the soil surface due to conservation tillage. To account for this, a 10% increase in herbicide and pesticide costs is assumed. Based on 1985 costs (OMAF, 1985), this assumption implies the following increases in crop production costs:

Grain Corn	- $2.90/ac
Soy Beans	- $1.93/ac
Barley	- $0.63/ac
W. Wheat	- $0.90/ac

YIELD IMPACTS

Yield impacts of conservation tillage systems vary considerably depending on many factors including soil type, climatic conditions, and the level of management applied to the system.

Research conducted in Ontario by Vyn (1983) indicates an average yield decline for corn of 5.3% on both silt loam and sandy loam soils over a period of 8 years when yields from chisel-plowed lands are compared with moldboard-plowed lands. Clay loam soils experienced a decline of 8% in corn yield on chisel plowed lands relative to moldboard-plowed land.

Research results for other Ontario crops are not widely reported, and so for purposes of this report, the same yield reductions are assumed to occur for crops other than corn when chisel plowing is used as the primary tillage operation.

Revenue impacts caused by these assumed yield reductions are summarized in Table 2.

Table 2: Conservation Tillage Impacts on Gross Crop Revenues

	Crop				
	Grain Corn	Soybeans	Wheat	Barley	Hay
Conventionala	310	257	211	145	184
Chiselb	294	243	200	137	-
Chiselc	285	236	194	133	-

a - Crop budget aids, OMAF, 1985

b - 5.3% yield decline on silty and sandy loams (Vyn, 1983)

c - 8.0% yield decline on clay loams (Vyn, 1983)

The yield reductions will engender certain savings during harvest for those costs estimated on the basis of the amount of crop handled. Transportation costs, certain field operations and marketing board fees all depend on yield. These cost savings are shown in Table 3 (based on data by OMAF, 1985).

Table 3 - Impact of Conservation Tillage on Harvesting Costs

Crop	Yield Reduction 5.3%	Yield Reduction 8%
Grain Corn	-3.46	-5.22
Soy Beans	-0.68	-1.03
Barley	-0.41	not applicable
W. Wheat	-0.54	not applicable

CROP SYSTEM COST IMPLICATIONS

In any year of a crop cycle the cost of conservation tillage with a chisel plow can be estimated as:

(net tillage cost) + (chemical costs) + (lost revenue) - (harvest cost savings)

Using this formula, the yearly cost of conservation tillage was estimated for the crop systems presented above. Average annual costs were estimated as the average cost over the cropping cycle.

Table 4: Conservation Tillage Costs for a Continuous Row Crop System

Crop Year	Silt Loam Soil (5.3% yield loss)	Clay Loam Soil (8% yield loss)
Soy Beans	18.05	24.70
Soy Beans	18.05	24.70
Gr. Corn	18.24	25.48
Gr. Corn	18.24	25.48
Gr. Corn	18.24	25.48
Average	18.16	25.16

Table 5: Conservation Tillage Costs for a Corn System

Crop Year	Silt Loam Soil (5.3% yield loss)
Gr. Corn	18.24
Gr. Corn	18.24
Gr. Corn	18.24
Barley	11.02
W. Wheat	14.16
Average	15.98

Table 6: Conservation Tillage Costs for a Mixed System

Crop year	Silt Loam Soil (5.3% yield loss)
Gr. Corn*	22.83
Gr. Corn	18.24
Gr. Corn	18.24
Barley	11.02
Hay	-
Hay	-
Hay	-
Average	10.05

* Costs are higher in the first year after Hay since fall tillage with the moldboard plow is needed to break the sod. Savings in tillage operating costs are not realized in this year.

PILOT WATERSHED COMPENSATION PAYMENT REQUIREMENTS

Pilot watershed costs will depend on total watershed size, farm size within the watersheds, cropping systems and other factors. To facilitate this analysis, we assume the following:

- 1000 acre watershed
- 5 - 200 acre farms/watershed

For the two southern watersheds in continuous row crops, total annual costs are therefore $18,000 and $25,000 for the silt loam and clay loam soils respectively. The northern basin with silt loam soils has an even split of mixed and corn systems; the annual cost here is $13,000. Total annual costs are $56,000 or $3,700 per farm. The addition of payments for nuisance, record keeping, etc. plus an amount for unforeseen contingencies in the program would likely result in a per farm cost of about $4,500.

DISCUSSION

The conservation system assumed above is rather conservative in light of alternatives such as no-till or ridge-planting. No-till can cause greater yield impacts while a measure such as ridge planting involves considerably more up-front investment to secure equipment and prepare fields. The costs associated with use of the chisel plow may therefore be low. Alternatively, however, these costs are determined largely by yield impacts which will vary from year to year and from one farm or field to another. This could act to reduce or increase costs.

It is interesting to compare these estimates with actual compensation payments made in the Honey Creek Watershed Project (Honey Creek, 1982). Per acre compensation costs in this project started at values ranging from $28 to $125 (1979 U.S. dollars); well above the unit costs estimated above. These payments were designed to allay all cooperator fears concerning loss due to crop failure. By 1981, payments ranged between $25 and $80/acre. Moreover, the acreage receiving compensation had fallen substantially while the overall acreage receiving conservation tillage treatments had risen almost sevenfold. By the third year of the project, compensation payments costs, average of over all acres under treatment, amounted to $6/ac.

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SOIL AND WATER EVALUATION - Project Forecast

APPENDIX B

PERSONNEL COSTING FOR P.C. IN WATERSHED SUB-PROGRAM

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOC MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST	
	PER DIEM	550		475		350		400		400		400		375	
YEAR 1	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Project start-up	1	2	1100	5	2375	0	0	0	0	0	0	0	0	0	0
Review candidate watersheds	2	2	1100	3	1425	2	700	2	800	2	800	2	800	0	0
Prepare study design	3	3	1650	10	4750	5	1750	3	1200	5	2000	3	1200	3	1125
Review with TAP	4	2	1100	2	950	0	0	0	0	0	0	0	0	0	0
Develop detail of information prog	5	0	0	1	475	5	1750	0	0	0	0	0	0	0	0
Contact w legitimizers	6	1	550	15	7125	15	5250	0	0	0	0	0	0	0	0
Public meetings	7	1	550	10	4750	30	10500	0	0	0	0	0	0	0	0
Social data collection & analysis	8	0	0	2	950	25	8750	0	0	0	0	0	0	0	0
Technical data collection	9	0	0	2	950	0	0	10	4000	10	4000	10	4000	10	3750
Identify candidate basins	10	2	1100	5	2375	2	700	2	800	2	800	2	800	2	750
Determine econ. suitability	11	0	0	1	475	0	0	0	0	0	0	3	1200	1	375
Feedback to landowners	12	0	0	10	4750	15	5250	0	0	0	0	0	0	0	0
Select paired basins	13	2	1100	5	2375	2	700	2	800	2	800	2	800	2	750
Prepare annual report	14	2	1100	10	4750	8	2800	5	2000	5	2000	3	1200	3	1125
Meetings with SA	15	10	5500	12	5700	0	0	0	0	0	0	0	0	0	0
Project admin	16	20	11000	10	4750	5	1750	3	1200	0	0	0	0	0	0
TOTALS		47	25850	103	48925	114	39900	27	10800	26	10400	25	10000	21	7875

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		RESIDENT TECH		OTHER TECHS		SR ENG		MODELLER		INFO SPEC		PROJ ADM ASS'T		TOTALS	
	PER DIEM	200		250		500		450		350		275			
YEAR 1	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Project start-up	1	0	0	0	0		0	0	0		0	0	0	7	3475
Review candidate watersheds	2	0	0	0	0		0	0	0		0	0	0	13	5625
Prepare study design	3	0	0	0	0	3	1500	5	2250		0	0	0	40	17425
Review with TAP	4	0	0	0	0		0	0	0		0	0	0	4	2050
Develop detail of information prog	5	0	0	0	0		0	0	0	10	3500	0	0	16	5725
Contact w legitimizers	6	0	0	0	0		0	0	0		0	0	0	31	12925
Public meetings	7	30	6000	0	0		0	0	0		0	0	0	71	21800
Social data collection & analysis	8	95	19000	35	8750		0	0	0		0	0	0	157	37450
Technical data collection	9	30	6000	0	0	1	500	0	0		0	0	0	73	23200
Identify candidate basins	10	10	2000	0	0	1	500	0	0		0	0	0	28	9825
Determine econ. suitability	11	5	1000	0	0		0	0	0		0	0	0	10	3050
Feedback to landowners	12	30	6000	0	0		0	0	0		0	0	0	55	16000
Select paired basins	13	5	1000	0	0	1	500	0	0		0	0	0	23	8825
Prepare annual report	14	10	2000	0	0		0	0	0		0	0	0	46	16975
Meetings with SA	15	0	0	0	0		0	0	0		0	0	0	22	11200
Project admin	16	40	8000	0	0	1	500	0	0		0	50	13750	129	40950
TOTALS		255	51000	35	8750	7	3500	5	2250	10	3500	50	13750	725	236500

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOC MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST	
PER DIEM		575		500		370		420		420		420		395	
YEAR 2	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Inventory of paired basins	1	0	0	10	5000	10	3700	10	4200	5	2100	8	3360	0	0
Feedback to farmers	2	0	0	0	0	5	1850	0	0	0	0	0	0	0	0
Develop detailed work plan	3	2	1150	5	2500	2	740	3	1260	5	2100	4	1680	0	0
Review with TAP & revise if needed	4	2	1150	4	2000	0	0	0	0	0	0	0	0	0	0
Detailed farm plans	5	0	0	5	2500	2	740	15	6300	25	10500	15	6300	0	0
Negotiate with farmers	6	2	1150	20	10000	0	0	0	0	0	0	0	0	0	0
Redo 5 and 6, if needed	7	1	575	2	1000	1	370	3	1260	5	2100	3	1260	0	0
Initiate water and soil monitoring	8	0	0	3	1500	0	0	2	840	0	0	0	0	10	3950
Design field measures	9	0	0	2	1000	0	0	0	0	0	0	40	16800	0	0
Dev record-keeping system w farmer	10	0	0	5	2500	0	0	0	0	5	2100	0	0	0	0
Construct structures	11	0	0	2	1000	0	0	0	0	0	0	15	6300	0	0
Arrange for equipment	12	0	0	5	2500	0	0	0	0	0	0	0	0	0	0
Orient to equipment	13	0	0	2	1000	0	0	0	0	15	6300	0	0	0	0
Public information program	14	0	0	3	1500	0	0	0	0	0	0	0	0	0	0
Prepare quarterly reports	15	3	1725	6	3000	1	370	1	420	1	420	1	420	1	395
Prepare annual report	16	3	1725	10	5000	2	740	2	840	2	840	2	840	0	0
Meeting with TAP	17	4	2300	8	4000	0	0	0	0	0	0	0	0	0	0
Meetings with SA	18	12	6900	25	12500	0	0	0	0	0	0	0	0	0	0
Project admin	19	10	5750	20	10000	2	740	3	1260	5	2100	5	2100	1	395
TOTALS		39	22425	137	68500	25	9250	39	16380	68	28560	93	39060	12	4740

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		RESIDENT TECH		OTHER TECHS		SR ENG		MODELLER		INFO SPEC		PROJ ADM ASS'T		TOTALS	
	PER DIEM	215				525		475		365		290			
YEAR 2	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Inventory of paired basins	1	75	16125	0		1	525	0		0		0		119	35010
Feedback to farmers	2	30	6450	0		0		0		0		0		35	8300
Develop detailed work plan	3	15	3225	0		2	1050	3	1425	0		0		41	15130
Review with TAP & revise if needed	4	0	0	0		0		0		0		0		6	3150
Detailed farm plans	5	60	12900	0		3	1575	0		0		0		125	40815
Negotiate with farmers	6	25	5375	0		0		0		0		0		47	16525
Redo 5 and 6, if needed	7	30	6450	0		0		0		0		0		45	13015
Initiate water and soil monitoring	8	10	2150	0		0		0		0		0		25	8440
Design field measures	9	20	4300	0		3	1575	0		0		0		65	23675
Dev record-keeping system w farmer	10	30	6450	0		0		0		0		0		40	11050
Construct structures	11	70	15050	0		2	1050	0		0		0		89	23400
Arrange for equipment	12	20	4300	0		0		0		0		0		25	6800
Orient to equipment	13	70	15050	0		0		0		0		0		87	22350
Public information program	14	0	0	0	0	0		0		40	14600	0		43	16100
Prepare quarterly reports	15	30	6450	0		0		0		0		0		44	13200
Prepare annual report	16	40	8600	0		0		0		0		0		61	18585
Meeting with TAP	17	0	0	0		0		0		0		0		12	6300
Meetings with SA	18	0	0	0		0		0		0		0		37	19400
Project admin	19	200	43000	0		2	1050	0		3	1095	100	29000	351	96490
TOTALS		725	155875	0	0	13	6825	3	1425	43	15695	100	29000	1297	397735

SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOC MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST	
	PER DIEM	605		525		390		440		440		440		415	
YEAR 3	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Collect data with farmers	1	0	0	15	7875	0	0	5	2200	50	22000	5	2200	0	0
Collect water quality data	2	0	0	10	5250	0	0	0	0	0	0	5	2200	20	8300
Complete construction	3	0	0	5	2625	0	0	0	0	5	2200	10	4400	0	0
Data analysis	4	10	6050	20	10500	0	0	5	2200	15	6600	5	2200	0	0
Public information program	5	0	0	3	1575	0	0	0	0	0	0	0	0	0	0
Progress reports (quarterly)	6	3	1815	6	3150	0	0	3	1320	6	2640	3	1320	2	830
Prepare annual report	7	3	1815	5	2625	0	0	2	880	4	1760	2	880	2	830
Meetings with Tap	8	4	2420	8	4200	0	0	0	0	0	0	0	0	0	0
Meetings with SA	9	12	7260	20	10500	0	0	0	0	0	0	0	0	0	0
Project admin	10	10	6050	20	10500	0	0	1	440	8	3520	3	1320	1	415
TOTALS		42	25410	112	58800	0	0	16	7040	88	38720	33	14520	25	10375

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		RESIDENT TECH		OTHER TECHS		SR ENG		MODELLER		INFO SPEC		PROJ ADM ASS'T		TOTALS	
	PER DIEM	225		280		550		500		385		305			
YEAR 3	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Collect data with farmers	1	110	24750	0		0		0		0		0	0	185	59025
Collect water quality data	2	110	24750	0		0		0		0		0	0	145	40500
Complete construction	3	110	24750	0		1	550	0		0		0	0	131	34525
Data analysis	4	180	40500	0		2	1100	0		0		0	0	237	69150
Public information program	5	0	0	0		0	0	0		40	15400	0	0	43	16975
Progress reports (quarterly)	6	10	2250	0		0		0		0		0	0	33	13325
Prepare annual report	7	15	3375	0		0		0		0		0	0	33	12165
Meetings with Tap	8	0	0	0		0		0		0		0	0	12	6620
Meetings with SA	9	0	0	0		0		0		0		0	0	32	17760
Project admin	10	190	42750	0		1	550	0		3	1155	100	30500	337	97200
TOTALS		725	163125	0	0	4	2200	0	0	43	16555	100	30500	1188	367245

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOC MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST	
	PER DIEM	635		550		410		460		460		460		435	
YEAR 4	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Collect data with farmers	1	0	0	15	8250	0	0	5	2300	40	18400	3	1380	0	0
Collect water quality data	2	0	0	5	2750	0	0	0	0	0	0	3	1380	15	6525
Data analysis	3	10	6350	25	13750	0	0	8	3680	20	9200	4	1840	0	0
Public information program	4	0	0	3	1575	0	0	0	0	0	0	0	0	0	0
Progress reports (quarterly)	5	3	1905	6	3300	0	0	4	1840	6	2760	2	920	2	870
Prepare annual report	6	3	1905	5	2750	0	0	3	1380	4	1840	2	920	2	870
Meetings with Tap	7	4	2540	8	4400	0	0	0	0	0	0	0	0	0	0
Meetings with SA	8	12	7620	20	11000	0	0	0	0	0	0	0	0	0	0
Project admin	9	10	6350	20	11000	0	0	1	460	2	920	1	460	1	435
TOTALS		42	26670	107	58775	0	0	21	9660	72	33120	15	6900	20	8700

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		RESIDENT TECH		OTHER TECHS		SR ENG		MODELLER		INFO SPEC		PROJ ADM ASS'T		
PER DIEM		235		0		280		525		405		320		
YEAR 4	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	TOTALS days cost
Collect data with farmers	1	150	35250	0		0		0		0		0	0	213 65580
Collect water quality data	2	125	29375	0		0		0		0		0	0	148 40030
Data analysis	3	235	55225	0		2	560	0		0		0	0	304 90605
Public information program	4	0	0	0		0	0	0		40	15400	0	0	43 16975
Progress reports (quarterly)	5	10	2350	0		0		0		0		0	0	33 13945
Prepare annual report	6	15	3525	0		0		0		0		0	0	34 13190
Meetings with Tap	7	0	0	0		0		0		0		0	0	12 6940
Meetings with SA	8	0	0	0		0		0		0		0	0	32 18620
Project admin	9	190	44650	0		1	280	0		3	1215	100	32000	329 97770
TOTALS		725	170375	0	0	3	840	0	0	43	16615	100	32000	1148 363655

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNB		SOC MNB		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST	
	PER DIEM	640		580		430		480		480		480		455	
YEAR 5	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Collect data with farmers	1	0	0	15	8700	0	0	5	2400	30	14400	3	0	0	0
Collect water quality data	2	0	0	5	2900	0	0	0	0	0	0	3	0	10	4550
Data analysis	3	10	6600	25	14500	0	0	8	3840	25	12000	4	0	0	0
Public information program	4	0	0	3	1575	0	0	0	0	0	0	0	0	0	0
Progress reports (quarterly)	5	3	1980	6	3480	0	0	4	1920	6	2880	2	0	2	910
Prepare annual report	6	3	1980	5	2900	0	0	3	1440	4	1920	2	0	2	910
Meetings with Tap	7	4	2640	8	4640	0	0	0	0	0	0	0	0	0	0
Meetings with SA	8	12	7920	20	11600	0	0	0	0	0	0	0	0	0	0
Project admin	9	10	6600	20	11600	0	0	1	480	2	960	1	480	2	910
TOTALS		42	27720	107	61895	0	0	21	10080	67	32160	15	480	16	7280

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		RESIDENT TECH		OTHER TECHS		SR ENG		MODELLER		INFO SPEC		PROJ ADM ASS'T		
	PER DIEM	245				610		550		425		340		
YEAR 5	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	TOTALS days cost
Collect data with farmers	1	150	36750		0		0		0		0	0	0	203 42250
Collect water quality data	2	125	30625		0		0		0		0	0	0	143 38075
Data analysis	3	235	57575		0	2	1220		0		0	0	0	309 95735
Public information program	4	0	0		0	0	0		0	40	15400			43 16975
Progress reports (quarterly)	5	10	2450		0		0		0		0	0	0	33 13620
Prepare annual report	6	15	3675		0		0		0		0	0	0	34 12825
Meetings with Tap	7	0	0		0		0		0		0	0	0	12 7280
Meetings with SA	8	0	0		0		0		0		0	0	0	32 19320
Project admin	9	190	46550		0	1	610		0	3	1275	100	34000	330 103465
TOTALS		725	177625	0	0	3	1830	0	0	43	16675	100	34000	1139 349745

SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOC MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST	
	PER DIEM	690		610		450		500		500		500		475	
YEAR 6	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Collect data with farmers	1	0	0	20	12200	0	0	10	5000	50	25000	8	4000	0	0
Collect water quality data	2	0	0	5	3050	0	0	0	0	0	0	3	1500	10	4750
Data analysis	3	12	8280	40	24400	0	0	15	7500	40	20000	10	5000	0	0
Public information progras	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Progress reports (quarterly)	5	4	2760	6	3660	0	0	4	2000	6	3000	3	1500	3	1425
Prepare final report	6	10	6900	20	12200	0	0	10	5000	20	10000	10	5000	15	7125
Meetings with Tap	7	6	4140	10	6100	0	0	0	0	0	0	0	0	0	0
Meetings with SA	8	15	10350	25	15250	0	0	0	0	0	0	0	0	0	0
Project admin	9	15	10350	30	18300	0	0	3	1500	5	2500	3	1500	3	1425
TOTALS		62	42780	156	95160	0	0	42	21000	121	60500	37	18500	31	14725

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SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		RESIDENT TECH		OTHER TECHS		SR ENG		MODELLER		INFO SPEC		PROJ ADM ASS'T		TOTALS	
	PER DIEM =	260				640		580		445		360			
YEAR 6	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Collect data with farmers	1	150	39000	0		0		0		0		0		238	85200
Collect water quality data	2	115	29900	0		0		0		0		0		133	39200
Data analysis	3	190	49400	0		4	2560	0		0		0		311	117140
Public information program	4	0	0	0		0	0	0		40	15400	0		40	15400
Progress reports (quarterly)	5	20	5200	0		0		0		0		0		46	19545
Prepare final report	6	60	15600	0		3	1920	0		0		0		148	63745
Meetings with Tap	7	0	0	0		0		0		0		0		16	10240
Meetings with SA	8	0	0	0		0		0		0		0		40	25600
Project admin	9	190	49400	0		2	1280	0		3	1335	100	36000	354	123590
TOTALS		725	188500	0	0	9	5760	0	0	43	16735	100	36000	1326	499660

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APPENDIX C

SOIL AND WATER EVALUATION - Project Forecast

PERSONNEL COSTING FOR H.C. IN TECHNOLOGY EVALUATION PROGRAM

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST		ADMIN ASSIS	
PER DIEM		550		475		400		400		400		375		275	
YEAR 1	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
A. CLARIFY PROJECT OBJECTIVES															
Literature review	A1	3	1650	10	4750	15	6000	25	10000	15	6000	10	3750		0
Screening of "best tech's"	A2	3	1650	10	4750	15	6000	20	8000	10	4000	10	3750		0
Prepare briefs & summaries	A3	3	1650	10	4750	5	2000	6	2400	3	1200	3	1125		0
Review with TAP	A4	4	2200	5	2375	0	0	0	0	0	0	0	0		0
Delineate goals & objectives	A5	2	1100	4	1900	2	800	2	800	2	800	2	750		0
		0	0	0	0	0	0	0	0	0	0	0	0		0
B. PREPARE 1 & 5 YEAR WORK PLANS															
Develop evaluation methodology	B1	5	2750	15	7125	15	6000	20	8000	10	4000	5	1875		0
Prepare briefs & summaries	B2	3	1650	10	4750	3	1200	4	1600	3	1200	2	750		0
Prelim exper design	B3	5	2750	15	7125	15	6000	20	8000	10	4000	5	1875		0
Contingency plans	B4	2	1100	5	2375	3	1200	5	2000	3	1200	2	750		0
Criteria for performance appraisal	B5	3	1650	5	2375	2	800	5	2000	3	1200	2	750		0
Review w TAP	B6	4	2200	8	3800	0	0	0	0	0	0	0	0		0
Finalize work plan	B7	5	2750	10	4750	4	1600	10	4000	4	1600	2	750		0
		0	0	0	0	0	0	0	0	0	0	0	0		0
C. IMPLEMENTATION								0							
Prepare RFP's	C1	3	1650	10	4750	2	800	4	1600	3	1200	2	750		0
		0	0	0	0	0	0	0	0	0	0	0	0		0
D. ADMINISTRATION															
Quarterly progress reports	D1	2	1100	3	1425	2	800	3	1200	2	800	2	750		0
Meetings w SA	D2	7	3850	10	4750	0	0	0	0	0	0	0	0		0
Project admin	D3	10	5500	20	9500	8	3200	12	4800	6	2400	5	1875	150	41250
		0	0	0	0	0	0	0	0	0	0	0	0		0
		0	0	0	0	0	0	0	0	0	0	0	0		0
TOTALS		64	35200	150	71250	91	36400	136	54400	74	29600	52	19500	150	41250

SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY			
	PER DIEM	TOTALS	
YEAR 1	Task	days	cost
A. CLARIFY PROJECT OBJECTIVES			
Literature review	A1	78	32150
Screening of "best tech's"	A2	68	28150
Prepare briefs & summaries	A3	30	13125
Review with TAP	A4	9	4575
Delineate goals & objectives	A5	14	6150
		0	0
B. PREPARE 1 & 5 YEAR WORK PLANS		0	0
Develop evaluation methodology	B1	70	29750
Prepare briefs & summaries	B2	25	11150
Prelim exper design	B3	70	29750
Contingency plans	B4	20	8625
Criteria for performance appraisal	B5	20	8775
Review w TAP	B6	12	6000
Finalize work plan	B7	35	15450
		0	0
C. IMPLEMENTATION			
Prepare RFP's	C1	24	10750
		0	0
D. ADMINISTRATION			
Quarterly progress reports	D1	14	6075
Meetings w SA	D2	17	8600
Project admin	D3	211	68525
		0	0
		0	0
TOTALS		717	287600

SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST		ADMIN ASSIS	
PER DIEM		575		500		420		420	420	420		395		290	
YEAR 2	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Review and evaluate RFP's	1	5	2875	24	12000	8	3360	12	5040	10	4200	5	1975		0
Test proposals against model(s)	2	3	1725	12	6000	9	3780	12	5040	10	4200	5	1975		0
Recommend proposal for acceptance	3	3	1725	5	2500	3	1260	5	2100	3	1260	2	790		0
Develop contract documents	4	5	2875	12	6000	3	1260	8	3360	5	2100	2	790		0
Visit field sites	5	5	2875	16	8000	5	2100	53	22260	5	2100	5	1975		0
Trouble shooting	6	10	5750	9	4500	5	2100	8	3360	15	6300	5	1975		0
Public information program	7	5	2875	10	5000	3	1260	8	3360	4	1680	2	790		0
Summarize & evaluate results	8	5	2875	9	4500	9	3780	12	5040	10	4200	4	1580		0
Conduct technology analysis	9	5	2875	9	4500	9	3780	16	6720	10	4200	4	1580		0
Prepare briefs & summaries to TAP	10	5	2875	10	5000	3	1260	5	2100	3	1260	2	790		0
Prepare quarterly reports	11	2	1150	4	2000	2	840	3	1260	2	840	2	790		0
Review/revise exp dsgn work plans	12	5	2875	9	4500	9	3780	13	5460	10	4200	4	1580		0
Prepare annual report	13	2	1150	5	2500	3	1260	5	2100	2	840	2	790		0
Meet w SA	14	12	6900	12	6000	0	0	0	0	0	0	0	0		0
Meet with TAP	15	3	1725	4	2000	0	0	0	0	0	0	0	0		0
Administration	16	10	5750	23	11500	10	4200	18	7560	10	4200	5	1975	125	36250
			0	0	0		0		0		0		0		0
			0	0	0		0		0		0		0		0
			0	0	0		0		0		0		0		0
			0	0	0		0		0		0		0		0
			0	0	0		0		0		0		0		0
			0	0	0		0		0		0		0		0
			0	0	0		0		0		0		0		0
TOTALS		85	48875	173	86500	81	34020	178	74760	99	41580	49	19355	125	36250

SOIL AND WATER EVALUATION - Project Forecast

ACTIVITY		INFO SPEC			
PER DIEM		350			
YEAR 2	Task	days	cost	TOTALS days	TOTALS cost
Review and evaluate RFP's	1		0	64	29450
Test proposals against model(s)	2		0	51	22720
Recommend proposal for acceptance	3		0	21	9635
Develop contract documents	4		0	35	16385
Visit field sites	5		0	89	39310
Trouble shooting	6		0	52	23985
Public information program	7	60	21000	92	35965
Summarize & evaluate results	8		0	49	21975
Conduct technology analysis	9		0	53	23655
Prepare briefs & summaries to TAP	10		0	28	13285
Prepare quarterly reports	11		0	15	6880
Review/revise exp dsgn work plans	12		0	50	22395
Prepare annual report	13		0	19	8640
Meet w SA	14		0	24	12900
Meet with TAP	15		0	7	3725
Administration	16	5	1750	206	73185
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
TOTALS		65	22750	855	364090

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST		ADMIN ASSIS	
	PER DIEM	605		525		440		440		440		415		305	
YEAR 3	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Renegotiate projects	1	5	3025	12	6300	4	1760	5	2200	4	1760	2	830		0
Process new RFP's & contracts	2	9	5445	16	8400	7	3080	10	4400	6	2640	4	1660		0
Visit field sites	3	5	3025	9	4725	5	2200	50	22000	6	2640	5	2075		0
Trouble shooting	4	5	3025	9	4725	5	2200	10	4400	5	2200	5	2075		0
Public information program	5	3	1815	5	2625	2	880	5	2200	3	1320	2	830		0
Prepare quarterly reports	6	2	1210	3	1575	2	880	2	880	2	880	2	830		0
Summarize & evaluate results	7	4	2420	12	6300	8	3520	12	5280	8	3520	5	2075		0
Conduct technology analysis	8	5	3025	12	6300	9	3960	13	5720	8	3520	5	2075		0
Prepare briefs & summaries to TAP	9	4	2420	8	4200	4	1760	6	2640	3	1320	3	1245		0
Review/revise exp dsgn work plans	10	5	3025	9	4725	5	2200	12	5280	6	2640	4	1660		0
Prepare annual report	11	2	1210	4	2100	2	880	3	1320	2	880	2	830		0
Meet w SA	12	12	7260	12	6300	0	0		0		0		0		0
Meet with TAP	13	4	2420	6	3150	0	0		0		0		0		0
Administration	14	10	6050	13	6825	6	2640	12	5280	6	2640	4	1660	125	38125
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
TOTALS		671	39930	640	60375	494	23760	570	57200	494	23760	453	15770	430	38125

ACTIVITY		INFO SPEC			
	PER DIEM	365			
YEAR 3	Task	days	cost	TOTALS days	TOTALS cost
Renegotiate projects	1		0	32	15875
Process new RFP's & contracts	2		0	52	25625
Visit field sites	3		0	80	36665
Trouble shooting	4		0	39	18625
Public information program	5	60	21900	80	31570
Prepare quarterly reports	6		0	13	6255
Summarize & evaluate results	7		0	49	23115
Conduct technology analysis	8		0	52	24600
Prepare briefs & summaries to TAP	9		0	28	13585
Review/revise exp dsgn work plans	10		0	41	19530
Prepare annual report	11		0	15	7220
Meet w SA	12		0	24	13560
Meet with TAP	13		0	10	5570
Administration	14	5	1825	181	65045
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
TOTALS		3752	258920	7504	517840

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST		ADMIN ASSIS	
	PER DIEM	635		550		460		460		460		435		320	
YEAR 4	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Renegotiate projects	1	5	3175	12	6600	4	1840	5	2300	4	1840	2	870		0
Process new RFP's & contracts	2	10	6350	15	8250	6	2760	10	4600	4	1840	3	1305		0
Visit field sites	3	5	3175	8	4400	5	2300	50	23000	5	2300	5	2175		0
Trouble shooting	4	5	3175	8	4400	5	2300	10	4600	5	2300	5	2175		0
Public information program	5	3	1905	5	2750	2	920	5	2300	3	1380	2	870		0
Summarize & evaluate results	6	4	2540	12	6600	9	4140	12	5520	8	3680	5	2175		0
Conduct technology analysis	7	5	3175	12	6600	9	4140	12	5520	9	4140	5	2175		0
Prepare briefs & summaries to TAP	8	4	2540	8	4400	4	1840	6	2760	3	1380	3	1305		0
Prepare quarterly reports	9	2	1270	3	1650	2	920	2	920	2	920	2	870		0
Review/revise exp dsgn work plans	10	5	3175	9	4950	5	2300	10	4600	4	1840	4	1740		0
Prepare annual report	11	2	1270	4	2200	2	920	3	1380	2	920	2	870		0
Meet w SA	12	12	7620	12	6600		0		0		0		0		0
Meet with TAP	13	4	2540	6	3300		0		0		0		0		0
Administration	14	10	6350	13	7150	6	2760	13	5980	5	2300	4	1740	125	40000
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
TOTALS		76	48260	127	69850	59	27140	138	63480	54	24840	42	18270	125	40000

ACTIVITY		OTHER TECHS			
	PER DIEM	385			
YEAR 4	Task	days	cost	TOTALS days	cost
Renegotiate projects	1		0	32	16625
Process new RFP's & contracts	2		0	48	25105
Visit field sites	3		0	78	37350
Trouble shooting	4		0	38	18950
Public information program	5	60	23100	80	33225
Summarize & evaluate results	6		0	50	24655
Conduct technology analysis	7		0	52	25750
Prepare briefs & summaries to TAP	8		0	28	14225
Prepare quarterly reports	9		0	13	6550
Review/revise exp dsgn work plans	10		0	37	18605
Prepare annual report	11		0	15	7560
Meet w SA	12		0	24	14220
Meet with TAP	13		0	10	5840
Administration	14	5	1925	181	68205
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
TOTALS		65	25025	686	316865

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST		ADMIN ASSIS	
	PER DIEM	670		575		485		485		485		460		340	
YEAR 5	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Renegotiate projects	1	5	3350	10	5750	3	1455	3	1455	2	970	1	460		0
Process new RFP's & contracts	2	5	3350	10	5750	4	1940	5	2425	2	970	2	920		0
Visit field sites	3	5	3350	9	5175	6	2910	50	24250	6	2910	5	2300		0
Trouble shooting	4	5	3350	9	5175	5	2425	10	4850	5	2425	5	2300		0
Public information program	5	3	2010	5	2875	2	970	5	2425	3	1455	2	920		0
Summarize & evaluate results	6	4	2680	15	8625	10	4850	15	7275	10	4850	5	2300		0
Conduct technology analysis	7	5	3350	15	8625	10	4850	15	7275	10	4850	5	2300		0
Prepare briefs & summaries to TAP	8	4	2680	8	4600	4	1940	6	2910	3	1455	3	1380		0
Prepare quarterly reports	9	2	1340	3	1725	2	970	2	970	2	970	2	920		0
Review/revise exp dsgn work plans	10	5	3350	10	5750	5	2425	15	7275	6	2910	4	1840		0
Prepare annual report	11	2	1340	4	2300	2	970	3	1455	2	970	2	920		0
Meet w SA	12	12	8040	12	6900		0		0		0		0		0
Meet with TAP	13	4	2680	6	3450		0		0		0		0		0
Administration	14	10	6700	15	8625	6	2910	15	7275	6	2910	4	1840	125	42500
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
TOTALS		71	47570	131	75325	59	28615	144	69840	57	27645	40	18400	125	42500

ACTIVITY		OTHER TECHS			
	PER DIEM	405			
YEAR 5	Task	days	cost	TOTALS days	cost
Renegotiate projects	1		0	24	13440
Process new RFP's & contracts	2		0	28	15355
Visit field sites	3		0	81	40895
Trouble shooting	4		0	39	20525
Public information program	5	60	24300	80	34955
Summarize & evaluate results	6		0	59	30580
Conduct technology analysis	7		0	60	31250
Prepare briefs & summaries to TAP	8		0	28	14965
Prepare quarterly reports	9		0	13	6895
Review/revise exp dsgn work plans	10		0	45	23550
Prepare annual report	11		0	15	7955
Meet w SA	12		0	24	14940
Meet with TAP	13		0	10	6130
Administration	14	5	2025	186	74785
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
TOTALS		65	26325	692	336220

ACTIVITY		PERSONNEL: PROJ DIR		PROJ MNG		SOIL SC		AGRONOMIST		ENGINEER		BIOLOGIST		ADMIN ASSIS	
	PER DIEM	690		610		500		500		500		475		360	
YEAR 6	Task	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost	days	cost
Renegotiate contracts	1	3	2070	5	3050	3	1500	3	1500	2	1000	1	475		0
Visit field sites	2	3	2070	10	6100	5	2500	60	30000	5	2500	5	2375		0
Trouble shooting	3	5	3450	10	6100	5	2500	12	6000	5	2500	5	2375		0
Public information progras	4	5	3450	8	4880	3	1500	8	4000	4	2000	2	950		0
Summarize & evaluate results	5	10	6900	30	18300	20	10000	30	15000	15	7500	10	4750		0
Conduct technology analysis	6	10	6900	30	18300	20	10000	30	15000	5	2500	10	4750		0
Prepare briefs & summaries to TAP	7	8	5520	15	9150	5	2500	8	4000	5	2500	3	1425		0
Prepare quarterly reports	8	2	1380	4	2440	2	1000	2	1000	2	1000	2	950		0
Prepare final report	9	10	6900	20	12200	15	7500	25	12500	20	10000	10	4750		0
Meet w SA	10	12	8280	12	7320		0		0		0		0		0
Meet with TAP	11	6	4140	10	6100		0		0		0		0		0
Administration	12	15	10350	20	12200	8	4000	18	9000	6	3000	5	2375	100	36000
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
			0		0		0		0		0		0		0
TOTALS		89	61410	174	106140	86	43000	196	98000	69	34500	53	25175	100	36000

ACTIVITY		OTHER TECHS			
	PER DIEM	405			
YEAR 6	Task	days	cost	TOTALS days	cost
Renegotiate contracts	1		0	17	9595
Visit field sites	2		0	88	45545
Trouble shooting	3		0	42	22925
Public information progras	4	100	40500	130	57280
Summarize & evaluate results	5		0	115	62450
Conduct technology analysis	6		0	105	57450
Prepare briefs & summaries to TAP	7		0	44	25095
Prepare quarterly reports	8		0	14	7770
Prepare final report	9		0	100	53850
Meet w SA	10		0	24	15600
Meet with TAP	11		0	16	10240
Administration	12	10	4050	182	80975
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
			0	0	0
TOTALS		110	44550	877	448775